Stoller
Hanford Office

DOE-EM/GJ934-2005

299-E24-24 (C4647)
Log Data Report

Borehole Information:

Borehole: 299-E24-24 (C4647)			**Site:** IDF		
Coordinates (WA State Plane)		**GWL (ft)[1]:** 322.7		**GWL Date:** 05/11/05	
North	**East**	**Drill Date**	**TOC[2] Elevation**	**Total Depth (ft)**	**Type**
Not available	Not available	05/05	N/A[3]	438	Becker

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Becker dual wall - inner	N/A	6.24	6	0.12	N/A	364
Becker dual wall - outer	N/A	9	8	0.5	N/A	364
The casing thicknesses for both the 6- and 8-in. casings are from published data for Becker dual wall casing.						

Borehole Notes:

Zero reference is the ground surface. This borehole was logged through the drill pipe.

The Becker drilling system uses a dual-wall casing. Air flows down the annulus and cuttings are returned inside the inner casing. Total wall thickness is 0.620 in., increasing to 1.115 in. at the casing joints, which occur at 10-ft intervals.

Logging Equipment Information:

Logging System:	Gamma 4E		**Type:** 70% HPGe (34TP40587A)
Effective Calibration Date:	12/21/04	**Calibration Reference:**	DOE-EM/GJ854-2005
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	**1**	**2 Repeat**	**3**		
Date	05/11/05	05/12/05	05/12/05		
Logging Engineer	Spatz	Spatz	Spatz		
Start Depth (ft)	0.0	87.0	125.0		
Finish Depth (ft)	124.0	124.0	363.0		
Count Time (sec)	N/A	N/A	N/A		
Live/Real	R	R	R		
Shield (Y/N)	N	N	N		
Sample Interval	1.0	1.0	1.0		
MSA Interval (ft)	N/A	N/A	N/A		
Log speed (ft/min)	1.0	1.0	1.0		

Log Run	1	2 Repeat	3		
Pre-Verification	DE801CAB	DE811CAB	DE811CAB		
Start File	DE801000	DE811000	DE811038		
Finish File	DE801123	DE811037	DE811276		
Post-Verification	DE801CAA	DE811CAA	DE811CAA		
Depth Return Error (in.)	- 1	N/A	- 1.5		
Comments	No fine-gain adjustment.	No fine-gain adjustment.	No fine-gain adjustment.		

Logging Operation Notes:

The log was run in continuous mode with a logging speed of 1 ft/min. Data files were written at 1-ft intervals and contain the total counts acquired between two consecutive depths. For example, the depth interval of 0 ft, indicated in the above table, represents a file where the total gamma count data were acquired for approximately 60 seconds between 0 and 1 ft. The data points shown in log plots have been adjusted 0.5 ft to the midpoint of the depth interval so that the count rate (total counts per second) for the interval was written at 0.5 ft. The total gamma log was produced for correlation purposes. Gamma energy spectra are available, but counting statistics are relatively poor for most individual peaks.

Total gamma data were collected using Gamma 4E. Pre- and post-survey verification measurements employed the Amersham KUT (^{40}K, ^{238}U, and ^{232}Th) verifier with serial number 115. Logging was performed with a centralizer installed on the sonde. Zero reference was the ground surface. Maximum logging depth achieved was 363 ft.

Analysis Notes:

Analyst:	Henwood	Date:	07/25/05	Reference:	

Pre-run and post-run verification spectra were collected at the beginning and end of the day and compared to the acceptance criteria. All of the verification spectra were within the acceptance criteria.

Log spectra were processed in batch mode using APTEC SUPERVISOR to determine total counts, and count rates were calculated in EXCEL. Water and dead time corrections were not applied to the data. Gamma attenuation changed significantly as the sonde passed through the Becker dual walled pipe joints, and it is not possible to provide accurate casing correction factors. The influence of the thick joints is apparent on the total gamma where reduced count rates are exhibited at approximately 10-ft depth intervals.

Log Plot Notes:

Log plots are provided for total gamma counts per second. A plot of the repeat log versus the original log is included.

Results and Interpretations:

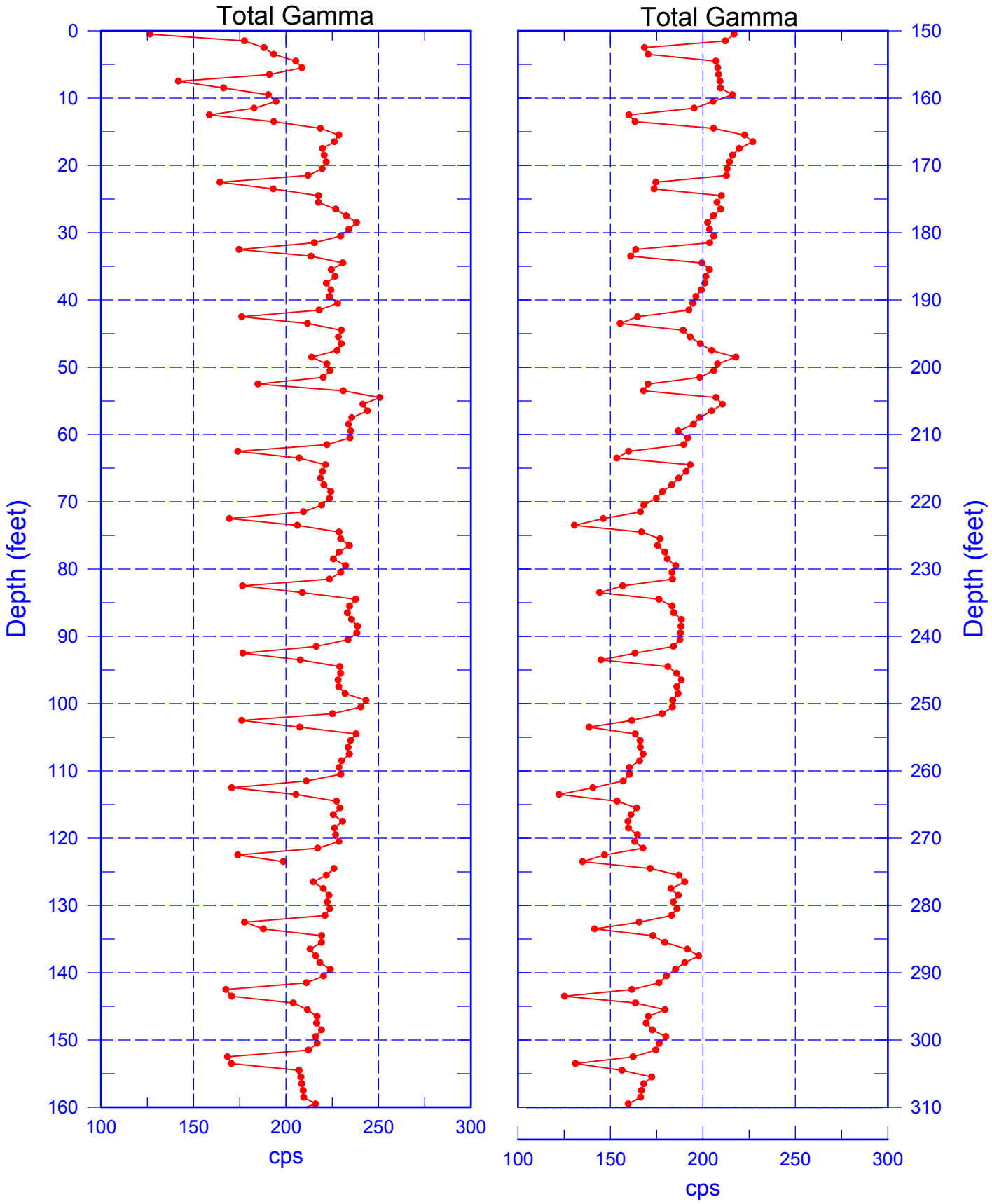
A decrease in gamma activity occurred at each casing joint, where the increase in wall thickness resulted in greater attenuation of gamma activity. No anomalous gamma activity was observed. This observation suggests no significant concentrations of man-made radionuclides.

A plot of the repeat log demonstrates reasonable repeatability of the total gamma log.

---

[1] GWL – groundwater level
[2] TOC – top of casing
[3] N/A – not applicable

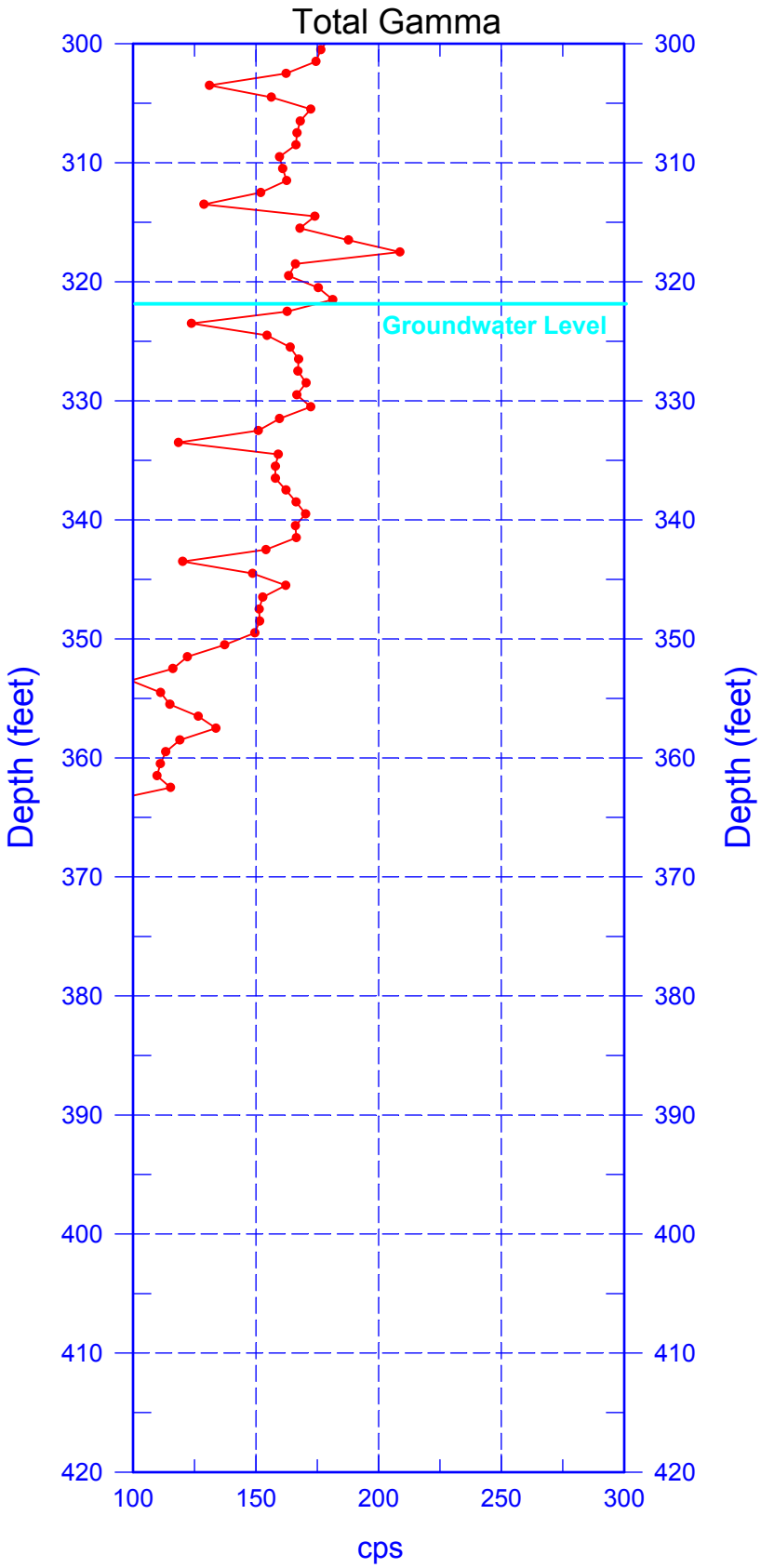
299-E24-24 (C4647)



Zero Reference = Ground Surface

Date of Last Logging Run - 05/12/05

299-E24-24 (C4647)

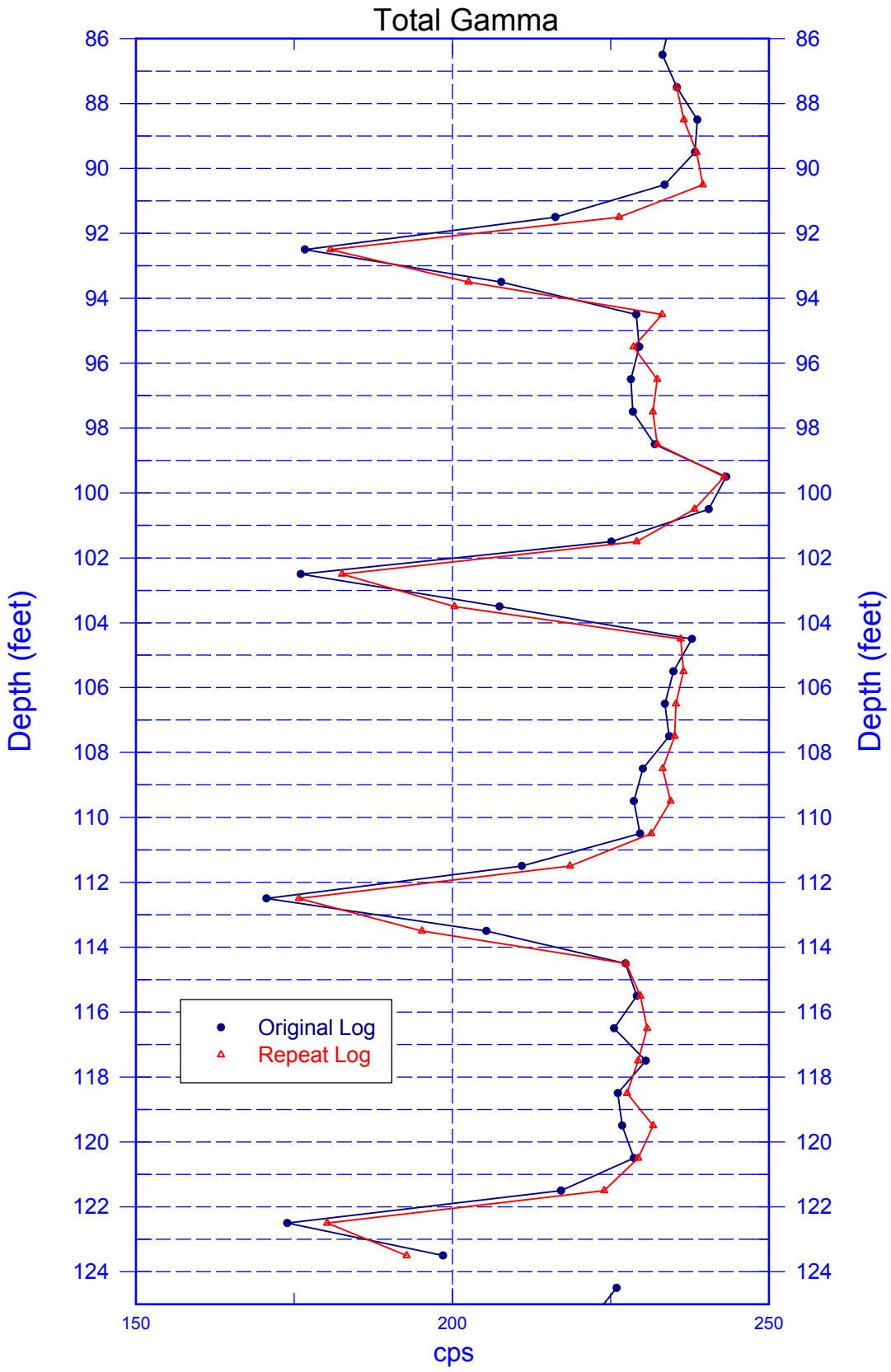


Zero Reference = Ground Surface

Date of Last Logging Run - 05/12/05

299-E24-24 (C4647)

Repeat of Total Gamma Log (86-125 ft)



Depth Reference - Ground Surface

Last Log Date - 05/12/05